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1  AAAAAGAAAG GAAGAAAATG GAAATACAAC AAACACACCG CAAAATCAAT
51 CGCCCTCTGG TTTCTCTCGC TTTAGTAGGA GCATTAGTCA GCATCACACC
101 GCAACAAAGT CATGCCGCCT TTTTCACAAC CGTGATCATT CCAGCCATTG
151 TTGGGGGTAT CGCTACAGGC ACCGCTGTAG GAACGGTCTC AGGGCTTCTT
201 AGCTGGGGGC TCAAACAAGC CGAAGAAGCC AATAAAACCC CAGATAAACC
251 CGATAAAGTT TGGCGCATTC AAGCAGGAAA AGGCTTTAAT GAATTCCCTA
301 ACAAGGAATA CGACTTATAC AGATCCCTTT TATCCAGTAA GATTGATGGA
351 GGTGTTGGGATT GGGGGAATGC CGCTAGGCAT TATTGGGTCA AAGGCGGGCA
401 ACAGAATAAG CTTGAAGTGG ATATGAAAGA CGCTGTAGGG ACTTATACCT
451 TATCAGGGCT TAGAACTTT ACTGGTGGGG ATTTAGATGT CAATATGCAA
501 AAAGCCACTT TACGCTTGGG CCAATTCAAT GGCAATTCTT TTACAAGCTA
551 TAAGGATAGT GCTGATCGCA CCACGAGAGT GATTTCAACG CTAAAAATAT
601 CTCAATTGAT AATTTTGCAG AAATCAACAA CTCGTGTGGG TTCTGGAGCC
651 GGGAGGAAAG CCAGCTCTAC GGTTTTGA CTGCAAGCTT CAGAAGGGAT
701 CACTAGCGAT AAAAACGCTG AAATTTCTCT TTATGATGGT GCCACGCTCA
751 ATTTGGCTTC AAGCAGCGTT AAATTAATGG GTAATGTGTG GATGGGCCGT
801 TTGCAATACG TGGGAGCGTA TTTGGCCCCT TCATACAGCA CGATAAACAC
851 TTCAAAAGTA ACAGGGGAAG TGAATTTTAA CCACCTCACT GTTGGCGATA
901 AAAACGCCGC TCAAGCGGGC ATTATCGCTA ATAAAAAGAC TAATATTGGC
951 AACTGGATT TGTGGCAAAG CGCCGGGTTA AACATTATCG CTCCTCCAGA
1001 AGGTGGCTAT AAGGATAAAC CCAATAATAC CCCTTCTCAA AGTGGTGCTA
1051 AAAACGACAA AAATGAAAGC GCTAAAAACG ACAAACAAGA GAGCAGTCAA
1101 AATAATAGTA AACTCAGGT CATTAACCCA CCAATAGTG CGCAAAAAAC
1151 AGAAGTTCAA CCCACGCAAG TCATTGATGG GCCTTTTGCG GCGGGCAAAG
1201 ACACGGTTGT CAATATCAAC CGCATCAACA CTAACGCTGA TGGCACGATT
1251 AGAGTGGGAG GGTTTAAAGC TTCTCTTACC ACCAATGCGG CTCATTTGCA
1301 TATCGGCAAA GCGGGTGTCA ATCTGTCCAA TCAAGCGAGC GGGCGCTCTC

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**FIG. 1A**

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1351 TTATAGTGGA AAATCTAACT GGAATATCA CCGTTGATGG GCCTTTAAGA
1401 GTGAATAATC AAGTGGGTGG CTATGCTTTG GCAGGATCAA GCGCGAATTT
1451 TGAGTTTAAAG GCTGGTACGG ATACCAAAAA CGGCACAGCC ACTTTTAATA
1501 ACGATATTAG TCTGGGAAGA TTTGTGAATT TAAAGGTGGA TGCTCATACA
1551 GCTAATTTTA AAGGTATTGA TACGGGTAAT GGTGGTTTCA ACACCTTAGA
1601 TTTTAGTGGC GTTACAGACA AAGTCAATAT CAACAAGCTC ATTACGGCTT
1651 CCACTAATGT GGCCGTAA AACTTCAACA TTAATGAATT GATTGTAA
1701 ACCAATGGGA TAAGTGTGGG GGAATATACT CATTTTAGCG AAGATATAGG
1751 CAGTCAATCG CGCATCAATA CCGTGCGTTT GGAAACTGGC ACTAGGTCAC
1801 TTTTCTCTGG GGGTGTAA TTTAAAGGTG GCGAAAAAT GGTATAGAT
1851 GAGTTTTACT ATAGCCCTTG GAATTATTTT GACGCTAGAA ATATTA
1901 TGTTGAAATC ACCAATAAAC TTGCTTTTGG ACCTCAAGGA AGTCCTTGGG
1951 GCACATCAAA ACTTATGTTC AATAATCTAA CCCTAGGTCA AAATGCGGTC
2001 ATGGATTATA GCCAATTTT AAATTTAACC ATTCAAGGGG ATTCATCAA
2051 CAATCAAGGC ACTATCAACT ATCTGGTCCG AGGTGGGAAA GTGGCAACCT
2101 TAAGCGTAGG CAATGCAGCA GCTATGATGT TTAATAATGA TATAGACAGC
2151 GCGACCGGAT TTTACAAACC GCTCATCAAG ATTAACAGCG CTCAAGATCT
2201 CATTAAAAAT ACAGAACATG TTTTATTGAA AGCGAAAATC ATTGGTTATG
2251 GTAATGTTTC TACAGGTACC AATGGCATTG GTAATGTAA TCTAGAAGAG
2301 CAATTCAAAG AGCGCCTAGC CCTTTATAAC AACAATAACC GCATGGATAC
2351 TTGTGTGGTG CGAAATACTG ATGACATTAA AGCATGCGGT ATGGCTATCG
2401 GCGATCAAAG CATGGTGAAC AACCCTGACA ATTACAAGTA TCTTATCGGT
2451 AAGGCATGGA AAAATATAGG GATCAGCAAA ACAGCTAATG GCTCTAAAT
2501 TTCGGTGTAT TATTTAGGCA ATTCTACGCC TACTGAGAAT GGTGGCAATA
2551 CCACAAATTT ACCCACAAC AGCACTAGCA ATGCACGTTC TGCCAACAAC
2601 GCCCTTGCAC AAAACGCTCC TTTCGCTCAA CCTAGTGCTA CTCCTAATTT
2651 AGTCGCTATC AATCAGCATG ATTTTGGCAC TATTGAAAGC GTGTTTGAAT

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**FIG. 1B**

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2701 TGGCTAACCG CTCTAAAGAT ATTGACACGC TTTATGCTAA CTCAGGCGCT  
2751 CAAGGCAGGG ATCTCTTACA AACCTTATTG ATTGATAGCC ATGATGCGGG  
2801 TTATGCCAGA AAAATGATTG ATGCTACAAG CGCTAATGAA ATCACCAAGC  
2851 AATTGAATAC GGCCACTACC ACTTTAAACA ACATAGCCAG TTTAGAGCAT  
2901 AAAACCAGCG GCTTACAAAC TTTGAGCTTG AGTAATGCGA TGATTTTAAA  
2951 TTCTCGTTTA GTCAATCTCT CCAGGAGACA CACCAACCAT ATTGACTCGT  
3001 TCGCCAAACG CTTACAAGCT TTAAAAGACC AAAAATTCGC TTCTTTAGAA  
3051 AGCGCGGCAG AAGTGTTGTA TCAATTTGCC CCTAAATATG AAAAACCTAC  
3101 CAATGTTTGG GCTAACGCTA TTGGGGGAAC GAGCTTGAAT AATGGCTCTA  
3151 ACGCTTCATT GTATGGCACA AGCGCGGGCG TAGACGCTTA CCTTAACGGG  
3201 CAAGTGGAAG CCATTGTGGG CGGTTTTGGA AGCTATGGTT ATAGCTCTTT  
3251 TAATAATCGT GCGAACTCCC TTAActCTGG GGCCAATAAC ACTAATTTTG  
3301 GCGTGTATAG CCGTATTTTA ACCAACCAGC ATGAATTTGA CTTTGAAGCT  
3351 CAAGGGGCAC TAGGGAGCGA TCAATCAAGC TTGAATTTCA AAAGCGCTCT  
3401 ATTACAAGAT TTGAATCAAA GCTATCATTA CTTAGCCTAT AGCGCTGCAA  
3451 CAAGAGCGAG CTATGGTTAT GACTTCGCGT TTTTtagGAA CGCTTTAGTG  
3501 TTAAAACCAA GCGTGGGTGT GAGCTATAAC CATTtagGTT CAACCAACTT  
3551 TAAAAGCAAC AGCACCAATC AAGTGGCTTT GAAAAATGGC TCTAGCAGTC  
3601 AGCATTtATT CAACGCTAGC GCTAATGTGG AAGCGCGCTA TTATTATGGG  
3651 GACACTTCAT ACTTCTACAT GAATGCTGGA GTTTTACAAG AGTTCGCTCA  
3701 TGTTGGCTCT AATAACGCCG CGTCTTTAAA CACCTTTAAA GTGAATGCCG  
3751 CTCGCAACCC TTAAATACC CATGCCAGAG TGATGATGGG TGGGGAATTA  
3801 AAATTAGCTA AAGAAGTGTT TTTGAATTTG GGCgTTGTTT ATTTGCACAA  
3851 TTTGATTtCC AATATAGGCC ATTTCGCTTC CAATTtagGA ATGAGGTATA  
3901 GTTTCTAAAT ACCGCTCTTA AACCCATGCT CAAAGCATGG GTTTGAAATC  
3951 TTACAAAACA

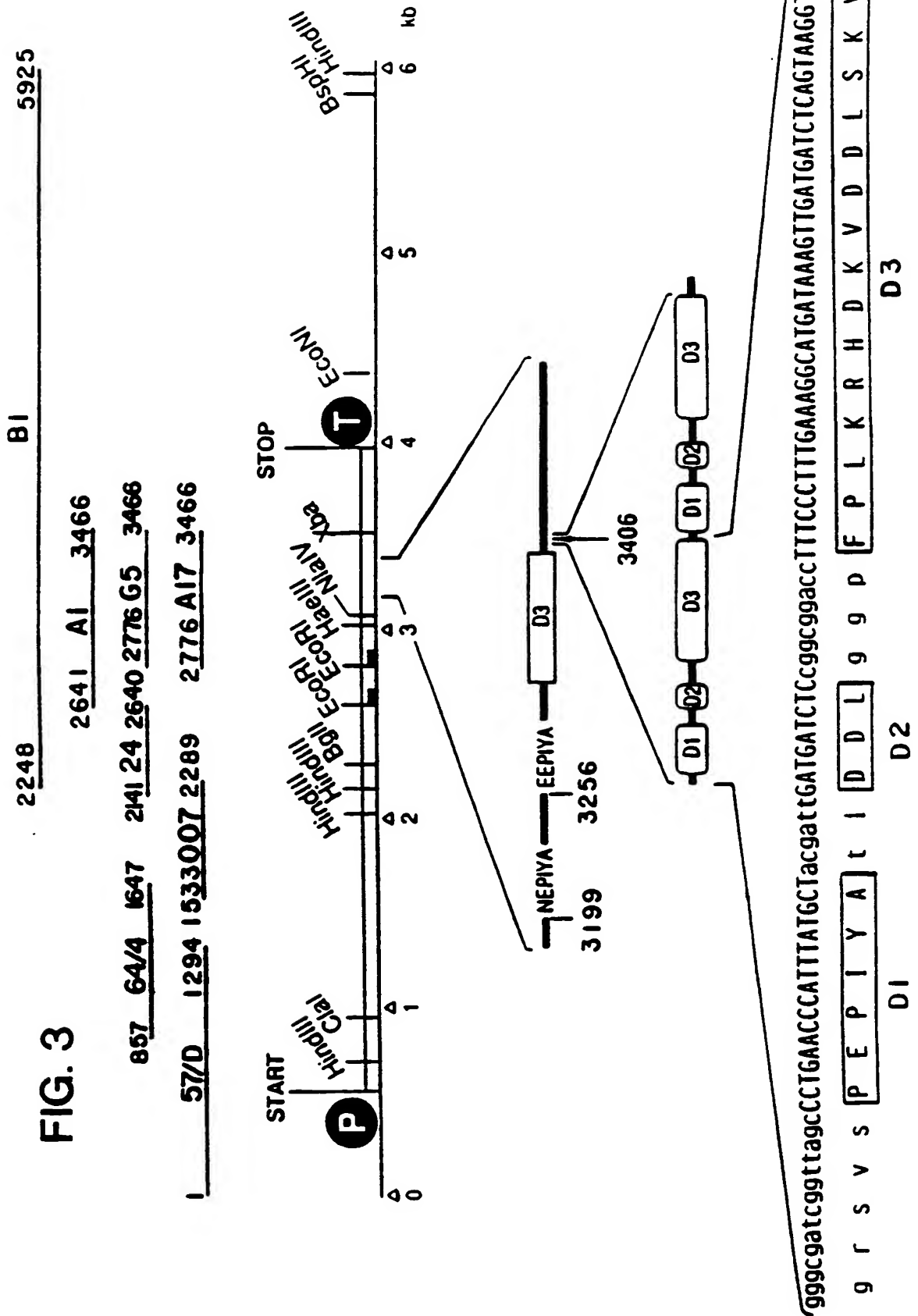
**FIG. 1C**

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1 MEIQQTHRKI NRPLVSLALV GALVSITPQQ SHAAFFTTVI IPAIVGGIAT  
51 GTAVGTVSGL LSWGLKQAE E ANKTPDKPDK VWRIQAGKGF NEFPNKEYDL  
101 YRSLSSKID GGWDWGNAAR HYWVKGGQQN KLEVDMKDAV GTYTLISGLRN  
151 FTGGDLVDNM QKATLRLGQF NGNSFTSYKD SADRTTRVIS TLKISQLIIL  
201 QKSTTRVGSG AGRKASSTVL TLQASEGITS DKNAEISLYD GATLNLASSS  
251 VKLMGNVWMG RLQYVGAYLA PSYSTINTSK VTGEVNFNHL TVGDKNAAQA  
301 GIIANKKTNI GTLDLWQSAG LNIIAPPEGG YKDKPNNTPS QSGAKNDKNE  
351 SAKNDKQESS QNNSNTQVIN PPNSAQKTEV QPTQVIDGPF AGGKDTVVNI  
401 NRINTNADGT IRVGGFKASL TTNA AHLHIG KGGVNLSNQA SGRSLIVENL  
451 TGNITVDGPL RVNNQVGGYA LAGSSANFEF KAGTDTKNGT ATFNNDISLG  
501 RFVNLKVDAH TANFKGIDTG NGGFNTLDFS GVTDKVNINK LITASTNVAV  
551 KNFNINELIV KTNGISVGEY THFSEDIGSQ SRINTVRLET GTRSLFSGGV  
601 KFKGGEKLV I DEFYYSPWNY FDARNIKNVE ITNKLAFGPQ GSPWGTSKLM  
651 FNNLT LGQNA VMDYSQFLNL TIQGDFINNQ GTINYLVRRG KVATLSVGNA  
701 AAMMFNNDID SATGFYKPLI KINSAQDLIK NTEHVLLKAK IIGYGNVSTG  
751 TNGISNVNLE EQFKERLALY NNNNRMDTCV VRNTDDIKAC GMAIGDQSMV  
801 NNP DNYKYLI GKAWKNIGIS KTANGSKISV YYLGNSTPTE NGGNTTNLPT  
851 NTTSNARSAN NALAQNAPFA QPSATPNLVA INQHDFGTIE SVFELANRSK  
901 DIDTLYANS G AQGRDLLQTL LIDSHDAGYA RKMIDATSAN EITKQLNTAT  
951 TTLNNIASLE HKTSGLQTLS LSNAMILNSR LVNLSRRHTN HIDSFAKRLQ  
1001 ALKDQKFASL ESAAEVLYQF APKYEKPTNV WANAIGGTSL NNGSNASLYG  
1051 TSAGVDAYLN GQVEAIVGGF GSYGYSSFNN RANSLNSGAN NTNFGVYSRI  
1101 LTNQHEFD FE AQGALGSDQS SLNFKSALLQ DLNQSYHYLA YSAATRASYG  
1151 YDFAFFRNAL VLKPSVGVSY NHLGSTNFKS NSTNQVALKN GSSSQHLFNA  
1201 SANVEARYYY GDTSYFYMNA GVLQEFHVG SNNAASLNTF KVNAARNPLN  
1251 THARVMMGGE LKLAKEVFLN LGVVYLHNL I SNIGHFASN L GMRYSF

FIG. 2

**FIG. 3**



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CTCCATTTTAAGCAACTCCATAGACCACTAAAGAACTTTTTTTGAGGCTATCTTTGAAA  
GCTTAATTATACATGCTATAGTAAGCATGACACACAAACCAAACTATTTTTAGAACGCTT  
TCAAAAAGATTCAATTTCTTATTTCTTGTTCTTATTAAAGTTCTTTCATTTTAGCAAATTT  
CTTTTTTCAATATTAATAATGATTAATGAAAAAAAAAAAAAATGCTTGATATTGTTGTAT  
TTGACACTAACAGATACCGATAGGTATGAACTAGGTATAGTAAGGAGAAACAATGACT  
M T  
AATAATCTTCAAGTAGCTTTTCTTAAAGTTGATAACGCTGTCGCTTCATACGATCCTGAT  
23 N N L Q V A F L K V D N A V A S Y D P D  
CAATTAAGGGAAGAATACTCCAATAAAGCGATCAAAAATCCTACCAAAAAGAATCAGTAT  
63 Q L R E E Y S N K A I K N P T K K N Q Y  
GAATCTTCCACAAAGAGCTTTCAGAAATTTGGGGATCAGCGTTACCGAATTTTCACAAGT  
103 E S S T K S F Q K F G D Q R Y R I F T S  
GAAAATATCATACAACCCCTATCCTTGATGATAAAGAGAAAGCGGAGTTTTTGAAATCT  
143 E N I I Q P P I L D D K E K A E F L K S  
ATGGGCGTGTTTGATGAGTCCTTGAAAGAAAGGCAAGAAGCAGAAAAAATGGGAGAGCCT  
183 M G V F D E S L K E R Q E A E K N G E P  
GATGTCAAAGAAGCAATCAATCAAGAACCAGTTCCCATGTCCAACCAGATATAGCCACT  
223 D V K E A I N Q E P V P H V Q P D I A T  
AATTTTTCTAAATTCACTCTTGCGATATGGAAATGTTAGATGTTGAGGGAGTCGCTGAC  
263 N F S K F T L G D M E M L D V E G V A D  
TTAATGGGGAGTCATAATGGCATAGAACCTGAAAAAGTTTCATTGTTGTATGGGGGCAAT  
303 L M G S H N G I E P E K V S L L Y G G N  
AACAATGTGGCTACAATAATTAATGTGCATATGAAAAACGGCAGTGGCTTAGTCATAGCA  
343 N N V A T I I N V H M K N G S G L V I A  
GGCTCACAACGAGCATTAAAGTCAAGAAGAGATCCAAAACAAAATAGATTTTCATGGAATTT  
383 G S Q R A L S Q E E I Q N K I D F M E F  
ACTGAGATTAAAGATTTCCAAAAGACTCTAAGGCTTATTAGACGCCCTAGGGAATGAT  
423 T E I K D F Q K D S K A Y L D A L G N D  
AATGGGGATTTGAGCTACACTCTCAAAGATTATGGGAAAAAGCAGATAAAGCTTTAGAT  
463 N G D L S Y T L K D Y G K K A D K A L D  
TATTCTAATTTCAAATACACCAACGCCTCCAAGAATCCAATAAGGGTGTAGGCGTTACG

FIG. 4A

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ATCTGTCCTATTGATTTGTTTTCCATTTTGTTCCTGATCTTGTGGATCACAAC 120  
CATGTGCTCACCTTGACTAACCATTTCTCCAACCATACTTTAGCGTTGCATTTGATTTCT 240  
TTGTTAATTGTGGGTAAAAATGTGAATCGTCCTAGCCTTTAGACGCCTGCAACGATCGGG 360  
AATGAGAATGTTCAAAGACATGAATTGACTACTCAAGCGTGAGCGATTTTGTAGCAGTCT 480  
AACGAAACCATTGACCAACAACCACAAACCGAAGCGGCTTTTAACCCGCAGCAATTTATC 600  
N E T I D Q Q P Q T E A A F N P Q Q F I  
CAAAAACCAATCGTTGATAAGAACGATAGGGATAACAGGCAAGCTTTTGAAGGAATCTCG 720  
Q K P I V D K N D R D N R Q A F E G I S  
TTTTCAGACTTTATCAATAAGAGCAATGATTTAATCAACAAAGACAATCTCATTGATGTA 840  
F S D F I N K S N D L I N K D N L I D V  
TGGGTGTCCCATCAAAACGATCCGTCTAAATCAACACCCGATCGATCCGAAATTTTATG 960  
W V S H Q N D P S K I N T R S I R N F M  
GCCAAACAATCTTTTGCAGGAATCATTATAGGGAATCAAATCCGAACGGATCAAAAGTTC 1080  
A K Q S F A G I I I G N Q I R T D Q K F  
ACTGGTGGGGATTGGTTGGATATTTTTCTCTCATTATATTGACAAAAACAATCTTCT 1200  
T G G D W L D I F L S F I F D K K Q S S  
ACCACCACCGACATACAAGGCTTACCGCCTGAAGCTAGAGATTTACTTGATGAAAGGGGT 1320  
T T T D I Q G L P P E A R D L L D E R G  
ATTGATCCCAATTACAAGTTCAATCAATTATTGATTCACAATAACGCTCTGTCTTCTGTG 1440  
I D P N Y K F N Q L L I H N N A L S S V  
GGTGGTCCTGGAGCTAGGCATGATTGGAACGCCACCGTTGGTTATAAAGACCAACAAGGC 1560  
G G P G A R H D W N A T V G Y K D Q Q G  
GGTGGTGAGAAAGGGATTAACAACCCTAGTTTTTATCTCTACAAAGAAGACCAACTCACA 1680  
G G E K G I N N P S F Y L Y K E D Q L T  
CTTGACAAAATAATGCTAAATTAGACAACCTTGAGCGAGAAAGAGAAGGAAAAATTCCGA 1800  
L A Q N N A K L D N L S E K E K E K F R  
CGTATTGCTTTTGTTCCTAAAAAAGACACAAACATTCAAGCTTTAATTACTGAGTTTGGT 1920  
R I A F V S K K D T K H S A L I T E F G  
AGGGAGAAAAATGTTACTCTTCAAGGTAGCCTAAAACATGATGGCGTGATGTTTGTGAT 2040  
R E K N V T L Q G S L K H D G V M F V D  
AATGGCGTTTCCCATTTAGAAGTAGGCTTTAACAAGGTAGCTATCTTTAATTTGCCTGAT 2160

FIG. 4B

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503 Y S N F K Y T N A S K N P N K G V G V T  
TTAAATAATCTCGCTATCACTAGTTTCGTAAGGCGGAATTTAGAGGATAAACTAACCCT  
543 L N N L A I T S F V R R N L C D K L T T  
GAATTGGTTGGAAAACTTTAACTTCAATAAAGCTGTAGCTGACGCTAAAAACACAGGC  
583 E L V G K T L N F N K A V A D A K N T G  
CATTTAGAGAAAGAAGTAGAGAAAAAATTGGAGAGCAAAAGCGGCAACAAAAATAAAATG  
623 H L E K E V E K K L E S K S G N K N K M  
GCTAATAGAGACGCAAGAGCAATCGCTTACGCTCAGAATCTTAAAGGCATCAAAAGGGAA  
663 A N R D A R A I A Y A Q N L K G I K R E  
GAATTCAAAAATGGCAAAAATAAGGATTTTCAGCAAGGCAGAAGAACTAAAGCCCTT  
703 E F K N G K N K D F S K A E E T L K A L  
AATGCAGCTTTGAATGAATTCAAAAATGGCAAAAATAAGGATTTTCAGCAAGGTAACGCAA  
743 N A A L N E F K N G K N K D F S K V T Q  
AAAGTTGATAATCTCAATCAAGCGGTATCAGTGGCTAAAGCAACGGGTGATTTTCAGTAGG  
783 K V D N L N Q A V S V A K A T G D F S R  
CAAAAAAATGAAAGTCTCAATGCTAGAAAAAATCTGAAATATATCAATCCGTAAAGAAT  
823 Q K N E S L N A R K K S E I Y Q S V K N  
AAAACTTTTCGGACATCAAGAAAGAGTTGAATGCAAACTTGGAAATTTCAATAACAAT  
863 K N F S D I K K E L N A K L G N F N N N  
CAAGCAGCTAGCCTTGAAGAACCATTACGCTCAAGTTGCTAAAAGGTAAATGCAAAA  
903 Q A A S L E E P I Y A Q V A K K V N A K  
CCTTTGAAAAGGCATGATAAAGTTGATGATCTCAGTAAGGTAGGGCTTTCAAGGAATCAA  
943 P L K R H D K V D D L S K V G L S R N Q  
TTTGGCAATCTAGAGCAAACGATAGACAAGCTCAAAGATTCTACAAACACAATCCCATG  
983 F G N L E Q T I D K L K D S T K H N P M  
TACGCTACTAACAGCCACATACGCATTAATAGCAATATCAAAAATGGAGCAATCAATGAA

FIG. 4C



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N G V S H L E V G F N K V A I F N L P D  
AAAGGATTGTCCCCACAAGAAGCTAATAAGCTTATCAAAGATTTTTTGAGCAGCAACAAA 2280  
K G L S P Q E A N K L I K D F L S S N K  
AATTATGATGAAGTGAAAAAGCTCAGAAAGATCTTGAAAAATCTCTAAGGAAACGAGAG 2400  
N Y D E V K K A Q K D L E K S L R K R E  
GAAGCAAAAGCTCAAGCTAACAGCCAAAAAGATGAGATTTTTGCGTTGATCAATAAAGAG 2520  
E A K A Q A N S Q K D E I F A L I N K E  
TTGTCTGATAAACTTGAAAATGTCAACAAGAATTTGAAAGACTTTGATAAATCTTTTGAT 2640  
L S D K L E N V N K N L K D F D K S F D  
AAAGGTTCTGGTGAAAGATTTAGGTATCAATCCAGAATGGATTTCAAAGTTGAAAACCTT 2760  
K G S V K D L G I N P E W I S K V E N L  
GCAAAAAGCGACCTTGAAAATTCCGTTAAAGATGTGATCATCAATCAAAGGTAACGGAT 2880  
A K S D L E N S V K D V I I N Q K V T D  
GTAGAGCAAGCGTTAGCCGATCTCAAAAATTTCTCAAAGGAGCAATTGGCCCAACAAGCT 3000  
V E Q A L A D L K N F S K E Q L A Q Q A  
GGTGTGAATGGAACCCTAGTCGGTAATGGGTTATCTCAAGCAGAAGCCACAACCTCTTCT 3120  
G V N G T L V G N G L S Q A E A T T L S  
AACAAATATGGACTCAAAAACGAACCCATTTATGCTAAAGTTAATAAAAAGAAAGCAGGG 3240  
N N N G L K N E P I Y A K V N K K K A G  
ATTGACCGACTCAATCAAATAGCAAGTGGTTTGGGTGTTGTAGGGCAAGCAGCGGGCTTC 3360  
I D R L N Q I A S G L G V V G Q A A G F  
GAATTGGCTCAGAAAATTGACAATCTCAATCAAGCGGTATCAGAAGCTAAAGCAGGTTTT 3480  
E L A Q K I D N L N Q A V S E A K A G F  
AATCTATGGGTTGAAAGTGCAAAAAAGTACCTGCTAGTTTGTGAGCGAAACTAGACAAT 3600  
N L W V E S A K K V P A S L S A K L D N  
AAAGCGACCGGCATGCTAACGCAAAAAACCCTGAGTGGCTCAAGCTCGTGAATGATAAG 3720

FIG. 4D

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1023 Y A T N S H I R I N S N I K N G A I N  
ATAGTTGCGCATAATGTAGGAAGCGTTCCTTTGTCAGAGTATGATAAAATTGGCTTC  
1063 I V A H N V G S V P L S E Y D K I G F  
GTAAAGACACTAATTCTGGCTTTACGCAATTTTAAACCAATGCATTTTCTACAGCA  
1103 V K D T N S G F T Q F L T N A F S T A  
GGTTTCCAAAATCTTAAAGGATTAAGGAATACCAAAAACGCAAAAACCACCCCTTG  
1143 G F Q K S  
TGAATGCTACCAATTCATGGTATCATATCCCATACATTTCGTATCTAGCGTAGGAAG  
AACTCTGTAAAATCCCTATTATAGGGACACAGAGTGAGAACCAAACTCTCCCTACGG  
GACAGACACTAACGAAAGGCTTTGTTCTTTAAAGTCTGCATGGATATTTCTACCCC  
CGAAAATTAATTAAGGGTTATAAAGAGAGCATAAACTAGAAAAACAAGTAGCTATA  
GAAAAATCAGAAAAACCATAGGAATTATCACACCTTATAATGCCCAAAAAGACGCT  
ATGCCTTTCAAGGTGAAGAGGCAGATATTATTATTCCACCGTGAAAACCTTG  
ATCTCATTTTTGTGGGTAAAAGTCTTTCTTTGAGAATTTATGAAGCGATGAGAAGA  
CATTCTTCGCTTCAAACGCTTTCATAAATCTCTAAAGCGCTTTATAATCAACAC  
TTATTAGCGTTACAATTTGAGCCATTCTTTAGCTTGTTTTCTAGCCAGATCACATC  
CTGCAAAATATCCTACAATAGCATCGCCGAATGGATGAGTAGGGGGGGTGTGAAAG  
TAAAATAATCACTTCGGGAAAATCTTTAAGGGAGTGAAATAAACGCATGCAAGTT  
TGCGAAACATTCAAATAGCCTTGTTGTTTCAGGGCATTGTCATAAGCGTTGGATTGG  
GCTAAAATGCTTGGCTCAATCACGCCACAATAGGGATTTTGAATGCTTTTGCATC  
TTGAAAAAATCAAAGCCTCTAAGCCAAATTGCTTGATCGTAGTGGGGTCTTTAGTG  
AGGCTTTTTAAAACGCTAAACCCTCCACACCGCTATCAAAAACGCCTATTTTCATG  
TCTTCATTGTCCTTAGTTTGTGATTTTAGAATAGACAAAGCTT 5925

**FIG. 4E**

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E K A T G M L T Q K N P E W L K L V N D K  
AACCAGAAGAATATGAAAGATTATTCTGATTGTTCAAGTTTTCCACCAAGTTGAACAATGCT 3840  
N Q K N M K D Y S D S F K F S T K L N N A  
TCTTATTACTGCTTGGCGAGAGAAAATGCGGAGCATGGAATCAAGAACGTTAATACAAAAGGT 3960  
S Y Y C L A R E N A E H G I K N V N T K G  
CTAAAAGCGAGGGGTTTTTAATACTCCTTAGCAGAAATCCCAATCGTCTTTAGTATTTGGGA 4080

TGTGCAAAGTTACGCCTTTGGAGATATGATGTGTGAGACCTGTAGGGAATGCGTTGGAGCTCA 4200  
GCAACATCAGCCTAGGAAGCCCAATCGTCTTTAGCGGTTGGGCACTTCACCTTAAAATATCCC 4320  
AAAAAGACTTAACCTTTGCTTAAATTAAGTTTGATTGTGCTAGTGGGTTGCTGCTATAGTG 4440  
ACAAAGATCAAGTTCAAAAAATCATAGAGCTTTTAGAGCAAATTGATCGCGCTCTTAACCAAA 4560  
TGCGATCAGAAGTGGAATAACGGCTTCAAGAATTTTGATGAGCTCAAAATAGACACTGTGG 4680  
GTAATCTTTCTTTCTTGCTAGATTCTAAACGCTTGAATGTGGCTATTTCTAGGGCAAAGAAA 4800  
ATATCTTTAGCGCTATTTTGCAAGTCTGTAGATAGGTAATCTTTTCAAAGATAATCATTAGA 4920  
AATACCCTTATAGTGTGAGCTATAGCCCTTTTTGGGAATTGAGTTATTTTGACTTTAAATTT 5040  
GCCGCTCGCATGAAATCCACTTTAGGGAATGCGTGTGCATTTTTTTAAGGGCGTATTTTG 5160  
GGCAAATGCTCCATAAAATAGCCCTCAATTTTTTGAGCGATTAAGGGAAAATGCGTGCAACC 5280  
TCTAACAATTCGCCCTCTAAATACTTTCTTCAATCAAAGGCACAAAAGAGAAGTGGCTAAA 5400  
ATCGTCGCTTTTGTCCTAGCACTAAAATAGGGGCGTTTTTATCTTTTACTTGTGCTTGATC 5520  
TCTTCTAAAGCTAGAGCGCTCGCTGTGTTGCATGCCACAATCAATAATTCAATCTGGTGCGGT 5640  
CCATAAGGCACTCTAGCCGTATCGCCATAATAGATGATTTTCATCAAATAATTGCGCTTTTAAA 5760  
ACACTTTTTTAATTTAATGGGATTAATTAGGGATTTTATTTTTCATTCATTAAGTTTAAAAAT 5880

FIG. 4F

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      10              30              50
AAGCTTGCTGTCATGATCACAAAAAACATAAAAAACATTATTATTAAGGATACAAAATG
                                         M

      70              90              110
GCAAAAGAAATCAAATTTTCAGATAGTGCGAGAAACCTTTTATTTGAAGGCGTGAGGCAA
A K E I K F S D S A R N L L F E G V R Q

      130             150             170
CTCCATGACGCTGTCAAAGTAACCATGGGGCCAAGAGGCAGGAATGTATTGATCCAAAAA
L H D A V K V T M G P R G R N V L I Q K

      190             210             230
AGCTATGGCGCTCCAAGCATCACCAAAGACGGCGTGAGCGTGGCTAAAGAGATTGAATTA
S Y G A P S I T K D G V S V A K E I E L

      250             270             290
AGTTGCCAGTAGCTAACATGGGCGCTCAACTCGTTAAAGAAGTAGCGAGCAAAACCGCT
S C P V A N M G A Q L V K E V A S K T A

      310             330             350
GATGCTGCCGGCGATGGCAGGACACAGCGACCGTGCTAGCTTATAGCATTTTTTAAAGAA
D A A G D G T T T A T V L A Y S I F K E

      370             390             410
GGTTTGAGGAATATCACGGCTGGGGCTAACCCCTATTGAAGTGAAACGAGGCATGGATAAA
G L R N I T A G A N P I E V K R G M D K

      430             450             470
GCTGCTGAAGCGATCATTAATGAGCTTAAAAAAGCGAGCAAAAAAGTAGGCGGTAAAGAA
A A E A I I N E L K K A S K K V G G K E

      490             510             530
GAAATCACCCAAGTGGCGACCATTCTGCAAACTCCGATCACAATATCGGGAAACTCATC
E I T Q V A T I S A N S D H N I G K L I

      550             570             590
GCTGACGCTATGGAAAAAGTGGGTAAAGACGGCGTGATCACCGTTGAGGAAGCTAAGGGC
A D A M E K V G K D G V I T V E E A K G

      610             630             650
ATTGAAGATGAATTGGATGTCGTAGAAGGCATGCAATTTGATAGAGGCTACCTCTCCCT
I E D E L D V V E G M Q F D R G Y L S P

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FIG. 5A

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670 690 710  
TATTTTGTAAACGAACGCTGAGAAAATGACCGCTCAATTGGATAATGCTTACATCCTTTTA  
Y F V T N A E K M T A Q L D N A Y I L L  
730 750 770  
ACGGATAAAAAAATCTCTAGCATGAAAGACATTCTCCCGCTACTAGAAAAAACCATGAAA  
T D K K I S S M K D I L P L L E K T M K  
790 810 HindIII  
GAGGGCAAACCGCTTTTAAATCATCGCTGAAGACATTGAGGGCGAAGCTTTAACGACTCTA  
E G K P L L I I A E D I E G E A L T T L  
850 870 890  
GTGGTGAATAAATTAAGAGGCGTGTGAATATCGCAGCGGTTAAAGCTCCAGGCTTTGGG  
V V N K L R G V L N I A A V K A P G F G  
910 930 950  
GACAGAAGAAAAGAAATGCTCAAAGACATCGCTATTTTAACCGGCGGTCAAGTCATTAGC  
D R R K E M L K D I A I L T G G Q V I S  
970 990 1010  
GAAGAATTGGGCTTGAGTCTAGAAAACGCTGAAGTGGAGTTTTTAGGCAAAGCTGGAAGG  
E E L G L S L E N A E V E F L G K A G R  
1030 1050 1070  
ATTGTGATTGACAAAGACAACACCACGATCGTAGATGGCAAAGGCCATAGCGATGATGTT  
I V I D K D N T T I V D G K G H S D D V  
1090 1110 1130  
AAAGACAGAGTCGCGCAGATCAAAACCCAAATTGCAAGTACGACAAGCGATTATGACAAA  
K D R V A Q I K T Q I A S T T S D Y D K  
1150 1170 1190  
GAAAAATTGCAAGAAAGATTGGCTAAACTCTCTGGCGGTGTGGCTGTGATTAAAGTGGGC  
E K L Q E R L A K L S G G V A V I K V G  
1210 1230 1250  
GCTGCGAGTGAAGTGGAAATGAAAGAGAAAAAAGACCGGGTGGATGACGCGTTGAGCGCG  
A A S E V E M K E K K D R V D D A L S A  
1270 1290 1310  
ACTAAAGCGGCGGTTGAAGAAGGCATTGTGATTGGTGGCGGTGCGGCTCTCATTGCGCGG  
T K A A V E E G I V I G G G A A L I R A

FIG. 5B

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1330 1350 1370  
GCTCAAAAAGTGCATTTGAATTTGCACGATGATGAAAAAGTGGGCTATGAAATCATCATG  
A Q K V H L N L H D D E K V G Y E I I M  
1390 1410 1430  
CGCGCCATTAAAGCCCCATTAGCTCAAATCGCTATCAACGCTGGTTATGATGGCGGTGTG  
R A I K A P L A Q I A I N A G Y D G G V  
1450 1470 1490  
GTCGTGAATGAAGTAGAAAAACACGAAGGGCATTTTGGTTTTAACGCTAGCAATGGCAAG  
V V N E V E K H E G H F G F N A S N G K  
1510 1530 1550  
TATGTGGATATGTTTAAAGAAGGCATTATTGACCCCTTAAAGTAGAAAGGATCGCTCTA  
Y V D M F K E G I I D P L K V E R I A L  
1570 1590 1610  
CAAAATGCGGTTTTCGGTTTCAAGCCTGCTTTTAACACAGAAGCCACCGTGCATGAAATC  
Q N A V S V S S L L L T T E A T V H E I  
1630 1650 1670  
AAAGAAGAAAAAGCGACTCCGGCAATGCCTGATATGGGTGGCATGGGCGGTATGGGAGGC  
K E E K A T P A M P D M G G M G G M G G  
1690 1710 1730  
ATGGGCGGCATGATGTAAGCCCGCTTGCTTTTTAGTATAATCTGCTTTTAAATCCCTTC  
M G G M M \*  
1750 1770 1790  
TCTAAATCCCCCCTTTCTAAAATCTCTTTTTGGGGGGTGCTTTGATAAACCGCTCG  
  
1810 1830  
CTTGTA AAAACATGCAACAAAAATCTCTGTTAAGCTT

FIG. 5C